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THE USEFULNESS OF WORD PRONUNCIATION RULES.

BY- EHANS, ROBERT
ILLINOIS TEACHERS COLL., CHICAGO-SOUTH

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THE USEFULNESS OF PHONIC RULES IN READING INSTRUCTION BEYOND THE FOURTH-GRADE LEVEL WAS INVESTIGATED TO ASCERTAIN IF THE CONCLUSIONS REACHED BY THEODORE CLYMER AND REPORTED IN THE JANUARY 1963 ISSUE OF "THE READING TEACHER" WERE VALID WHEN APPLIED TO A MORE REPRESENTATIVE SAMPLE OF VOCABULARY. LISTS OF ALL POSSIBLE WORDS (FROM A SAMPLE OF 1,944 WORDS BEYOND THE PRIMARY LEVEL) WHICH COULD APPLY TO 45 FREQUENTLY TAUGHT PHONIC RULES WERE MADE AND COMPARED WITH THE APPROPRIATE GENERALIZATION IN TERMS OF SPELLING AND SYLLABIFICATION. THE NUMBER OF WORDS CONFORMING TO EACH GENERALIZATION WAS RECORDED AND THE PERCENT OF WORDS COMPLYING WITH EACH OF THE 45 GENERALIZATIONS WAS CALCULATED. THE STUDY REVEALED THAT 16 GENERALIZATIONS MET CLYMER'S CRITERIA TO A REASONABLE DEGREE (CLYMER FOUND 18 AT THE PRIMARY LEVEL). THE IMPORTANT DIFFERENCE BETWEEN THE TWO STUDIES IS THAT SOME OF THE GENERALIZATIONS PROVED TO BE USEFUL AT ONLY ONE LEVEL. THIS RESULT VERIFIED THE THESIS FOR THE STUDY--THAT THE GRADE-LEVEL OF THE WORDS USED MAKES A DIFFERENCE AS TO THE APPLICABILITY OF PHONIC GENERALIZATIONS. FUTURE STUDIES ARE RECOMMENDED WHICH WILL DEVELOP PROCEDURES FOR TEACHING GENERALIZATIONS AND TRYING THEM OUT UNDER CONTROLLED EXPERIMENTAL CONDITIONS. (AW)

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THE USEFULNESS OF VOWEL PRONUNCIATION RULES

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Robert Emans
Chicago Teachers College - South
Chicago, Illinois 60621

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TABLE OF CONTENTS

	Page
List of Tables	ii
Chapter	
I. Problem	1
II. Related Research	5
III. Objectives and Procedures	24
IV. Analysis of the Data and Findings	30
V. Conclusions and Implications	63
References	72

LIST OF TABLES

Table		Page
1.	The Utility of Forty-Five Generalizations on Words Beyond the Primary Grade Level . . .	32
2.	The Utility of Forty-Five Generalizations on Primary Words	37

Chapter I

PROBLEM

Most authorities in reading education today advocate the teaching of phonics in some form. The consensus is that children need visual and auditory clues as aids in word recognition and phonics is one of the helps in providing these clues. Nevertheless, the issue of phonics remains clouded in an aura of controversy.

Little agreement exists concerning specific problems of phonic instruction. When should phonics be taught? To whom? How? And, the problem on which this study is focused, what phonics should be taught?

Part of the "what" of phonic instruction is the rules or generalizations used. For example, most adults are familiar with the rule that when there are two vowels, one of which is final e, the first vowel is long and the e is silent. Another example is the rule that when there are two vowels side by side, the long sound of the first one is heard and the second is usually silent. The present paper is centered around the usefulness of such rules.

An article in The Reading Teacher, "The Utility of Phonic Generalizations in the Primary Grades," by Theodore Clymer (1963) has been received with interest by many people engaged in reading instruction. In the article Clymer reports a study about the extent to which commonly taught phonic generalizations have a reasonable degree of application to words met in primary grade material. He concludes, "It seems quite clear that many generalizations which are commonly taught are of limited value." As an example he cites the often taught generalization that when there

are two vowels side by side, the long sound of the first one is heard and the second is usually silent. In his analysis he found that this generalization was true in only 45 percent of the cases studied. Clymer went on to say, "Some time-honored customs in the teaching of reading may be in need of revision." As a result of this article teachers of reading are questioning the teaching of many of the phonic generalizations previously taught.

This writer believes that additional investigation is needed before a revision is made in the teaching of phonic generalizations. Clymer analyzed 2600 words found in four widely used sets of primary grade readers. In another report Clymer (1961) raises the question, "Was the word list (he used) appropriate to the problem?" Clymer apparently does not answer this question although he raises it himself. This writer questions if the word list used by Clymer was appropriate. The reporting of the study by Clymer gave no indication that he intends to study a more inclusive sample.

It may be that the less common words in English are more likely to follow phonic rules. Cordts (1965, p. 20) found in her study,

> A study of the children's reading vocabulary shows that with each successive level of reading the relative number of "phonetic" words increases. On the preprimer level about 20 percent of the basic words in the children's readers are "phonetic." On the sixth-year level the percentage is reversed.
>
> It is significant to note that the subject-matter vocabulary in the students' textbooks...are almost entirely "phonetic" ...The subject-matter terms are the kind that lend themselves nicely to "phonetic" analysis, in the sense that the words conform to the rules of phonics.

Similarly, Hildreth (1958, p. 154) states, "The majority of the less frequently used polysyllabic words of classical origin are regularly pronounced, e.g., increment, derivation, refrigerator, synonymous, transport, thermometer, jurisdiction, sentinel, etc."

Many of the common words in English come from Anglo-Saxon and the less common words from other languages (Durkin, 1962, p. 3). The Anglo-Saxon words may be less consistent in their make-up due to changes evolved during their longer usage. Therefore, the phonic rules may be less likely to apply to the common words of Anglo-Saxon origin than to the less common words originating from other languages.

According to such authorities as Dolch (1941, p. 216), phonic generalizations are learned to help pupils recognize words independently, not just in the primary years, but in later years of schooling and throughout life. It may not be too difficult a task for a child to learn the 2600 words taught in the primary grades without the use of phonic generalizations. Many of the words in the primary years of schooling are taught, in fact, by "sight" since it is generally recognized that many of the common, basic words do not reflect phonic generalizations. It is the reasoning of this writer that the real question should not be whether or not the phonic generalizations hold true for the two or three thousand common words taught in primary school. Rather, do the generalizations hold true for the many thousands of words which the child must later recognize and for which it seems the phonic generalizations are more appropriately taught?

Before educators concur with the conclusion of Clymer's study that certain phonic generalizations should not be taught, it should be determined whether or not the phonic generalizations hold true for the thousands of words beyond the primary level. It seems that educators may discard phonic aids without adequately knowing their usefulness. Of course, if the study contained in this proposal were to find that the phonic generalizations are not useful in recognizing words beyond the primary level, much additional weight would be given to Clymer's conclusion and there probably would be need for a revision in the teaching of reading. This study, therefore, is designed to determine if the various phonic generalizations should be discarded as aids in the recognition of words beyond the primary grades.

This first chapter has stated the problem. The next chapter will review the related literature and the third chapter will describe the procedure used in the study. The fourth and fifth chapters will present the results and summarize the study, respectively.

Chapter II

RELATED RESEARCH

The literature of phonics research is voluminous. Heilman writes, "Phonics is the most written-about topic in the area of teaching reading and, possibly, the least understood." Detailed accounts of the literature concerning phonics and related areas are found in a number of references (Cordts, 1965; H. B. Smith, 1934). For the purpose of this study, the discussion will include a historical resume, the consistencies and inconsistencies ofthe English language as it relates to phonics, and phonic generalizations. The historical resume will show the tendency to sometimes reject practices only to find that such practices may be useful in some form at a later date.

History of Phonics

The first method of teaching reading was probably the alphabet-spelling method which may go back to the time of the Greeks and Romans or before. The New England Primer of 1690 in this country used it (H. P. Smith, Dechant, 1961). Children first were taught the names of the letters of the alphabet. Then, as each new word was presented, they were taught to spell it. Of course, the sounds of the latter names bore little resemblance to the sounds the letter names represented in the word content. But, miraculously, many children learned how to read.

As far back as 1534, Ickelsamer advocated the teaching of sounds rather than letters (H. P. Smith, Dechant, 1961). In 1570 John Hart illustrated Ickelsamer's criticism by pointing out that the spelling of t-h-e

resulted in the child saying te-ache-er or teacher (Fries, 1962, p. 219). The versatile genius Benjamin Franklin revised Ickelsamer's and Hart's concepts in teaching letter sounds and in 1768 published a device for teaching phonics in Scheme for a New Alphabet and Reformed Mode of Spelling (Fries, 1962, p. 145). However, it was not until the time of the American Revolution that a letter-sound approach was put into practice, and then not for the reasons previously proposed.

The teaching of phonics was not accepted until political reasons required its implementation. Near the end of the eighteenth century Noah Webster developed a scheme of phonics, not as a means for teaching reading, but in order to establish a standardized American speech which would reflect the new nation's concern for stable communication in a democracy. In the preface of The American Spelling Book (Webster, 1798, p. 1), popularly known as "The Blue-Back Speller," Webster stated his purpose for his phonic procedures.

> "To diffuse a uniformity and purity of language in America -- to destroy the provincial prejudices that originate in trifling differences of dialect, and produce reciprocal ridicule -- to promote the interest of literature and harmony of the United States -- is the most ardent wish of the Author; and it is his highest ambition to deserve the approbation and encouragement of his countrymen."

Thus the original reason for the wide adoption of a phonic method of teaching reading was not to teach reading per se, but rather to develop a uniform American dialect (N. B. Smith, 1963, p. 188).

Reaction Against Phonics

The predominance of phonic instruction in America went nearly

unchallenged for forty years until the 1840's when Americans such as Horace Mann visited the schools in Prussia and Switzerland and liked what they saw (N.B. Smith, 1963, p. 186). There, through the influence of Pestalozzi, who advocated teaching reading by presenting an object or a picture together with a word, educators began seriously to question the merits of a phonic approach. In 1658 Comenius had already authored his book, Orbis Sensualium Pictus (The World of Sense Objects Pictured) in which he had advocated teaching the meanings of words rather than their sounds (Burton, 1956, p. 210). Samuel Worcester, the American author of Primer of the English Language, in 1828 reiterated Comenius' words when he wrote,

> It is not, perhaps, important that a child should know the letters before he begins to read. He may first learn to read words by seeing them, hearing them pronounced, and having their meanings illustrated, and afterwards, it may learn to analyze them or name the letters of which they are composed (N.B. Smith, 1934, p. 86).

A pioneering study by Cattel in 1885 supported the new ideas for teaching whole words. He showed that in a given unit of time only a few unrelated letters could be recognized, but in the same amount of time it was possible to recognize words containing up to four times as many letters (H. P. Smith, Dechant, 1963, p. 199). Of this period Smith states, "This was the only period in American history in which the so-called word method was ever advocated by editors and authors as a general method of teaching reading" (N.B. Smith, 1963, p. 191).

Reaction Against Word Method

The word method was invogue for approximately forty-five years.

However, about 1890 phonics was brought back with a renewed emphasis, as it once again was thought to have merit. While the earlier phonic method had drilled the child on sounds of individual letters, the phonic method of this era shifted to a greater emphasis on groups of letters, often called word families. Rebecca Pollard developed such a method and similar approaches were adopted by The Ward Readers, The Beacon Readers, and The Gordon Readers. Reading was reduced to a number of mechanical drills, each of which focused attention on a unit smaller than a word, such as ill, am, ick, ate, old, ack (Hallman, 1961, p. 272). Children were drilled on more than a hundred phonetic elements before whole words or real sentences were introduced. The content, when introduced, was subservient to the phonic elements, e.g., Kate ate a date (N.B. Smith, 1963, p. 192).

The lengthy drill on sounds as an initial step in learning to read killed enthusiasm for reading. Perhaps worse, it made reading a mechanical exercise rather than a means of understanding what the author had to say. Although research indicated that such procedures produced familiarity with the alphabet and accurate spelling (Garrison, Heard, 1931; McDowell, 1953; Templin, 1954), they also produced pupils who were poor in word recognition, speed, and comprehension (Bear, 1939; Currier, 1923; Garrison, Heard, 1931; McDowell, 1953; Sparks, Fay, 1957).

Reaction Against Phonics; Word Method Re-introduced

The extreme emphasis on phonics at the turn of the century brought about a reaction against it during the 1920's. There was no room for

reform -- only expulsion (Heilman, 1961, p. 213). The new stress on reading silently and the increased volume of scientific research gave impetus to the reaction. In 1911 in England, Gill (1911-1912) reported a study testing a sentence method against a phonics method for reading speed. He found the sentence method superior. Other studies cast doubt on the value of intensive phonic instruction (Gates, 1927; Fenton, Herron, 1928). Garrison and Heard (1931) found that while instruction in phonics was helpful in the recognition and pronunciation of words, pupils who had not had phonic training were superior in comprehension and in smoothness of reading. Smith summarizes this era when she states, "With the new emphasis on meanings and severe criticism of the method of teaching phonics, the whole area of phonics teaching fell into disrepute -- phonics was practically abandoned throughout the country" (H.B. Smith, 1963, p. 193).

As reported by Gray (1941, p. 918) during the same period Hamilton (1907) and Judd (1918) concluded that the general characteristics of a word were the most used clues, but when a word was strange or different, distinction within the word becomes necessary. Gray (1941, p. 918) states in the Encyclopedia of Educational Research that by 1925 the following aids to word recognition were identified: context, configuration, significant details, phonetic analysis, principles of syllabication and accent, and the dictionary.

Phonics Re-introduced

Gradually, with dissatisfaction with the word method, more sophisticated

research studies, and the advent of new approaches, phonics made a comeback once again in the 1930's. A strict adherence to the word method was found to be unrealistic in that it is not possible to learn all words by sight. Total application of the word method did not diminish the trouble children experienced learning to read. Phonics was re-examined because it was thought that the difficulty children in former years had had in learning to read might not be the fault of phonics after all. (N. B. Smith, 1963, p. 193).

A number of studies supported the teaching of phonics. Winch (1925) in England tested the alphabet, the word approach, and two phonic approaches. His conclusions favored phonics. Tiffin and McKinnis (1940) correlated phonic ability with silent reading ability and found a considerable association between the two skills. In a study widely quoted by both opponents and supporters of phonics, Agnew (1939) found that phonics increased independence in word recognition, encouraged correct pronunciation, and improved oral reading, but did not affect comprehension. As a whole the study was favorable to phonic instruction. On the college level, Rogers (1938) showed that poor phonic ability was associated with inaccurate comprehension and generally by decreased proficiency in reading. Gates and Russell (1938) compared the general reading ability of children given no phonics, moderate phonics, and much phonics. They concluded that moderate amounts of phonics were best. Using somewhat more longitudinal procedures, Sexton and Herren (1928) concluded that phonics instruction was of very little help during the first part of

reading instruction but was of great value in the second grade.

Phonics Revised

The new procedures of teaching phonics developed during the late thirties and forties differed from the procedures used previously. Formerly, drill was given on parts of words before the child encountered them in whole words. This drill on isolated exercises, or a synthetic approach, gave way to a new approach often called the analytic approach. These terms differentiated the approaches -- one being the building up of words from their parts; the other the taking apart of a word in order to recognize it.

In the newer approach, the word was observed as a whole, then the parts were seen as components of the whole. This practice supported the previous research by Hamilton and Judd indicating that people tend to recognize the larger visual shapes of a word first and examine the distinct details only when the larger configuration can be readily identified (Rogers, 1938). Therefore the process started with real words which children already spoke -- words which interested them. Words which gave difficulty in daily reading were compared phonetically with words children already knew. Most teachers still use this approach, which removed phonics from the criticisms that children memorized phonic elements in exercises isolated from reading itself (H.B. Smith, 1963, p. 199). Hildreth (1958, p. 381) summarizes the advantages of the analytical approach.

> The advantages of the whole-word sounding for beginners may be summarized as follows:
>
> 1. Young children are interested primarily in the meanings

words have for them...

2. Whole-word sounding encourages children's self-discovery of letter-sound relationships and arouses children's interest in words...

3. The analytic method avoids blending problems, the chief stumbling block with other methods...

4. The whole-word method provides a maximum amount of practice in "reading through" words, the phonics skill most needed when the pupil deals with new words in context independently.

5. Whole-word sounding contributes directly to learning words so that they become familiar sight words.

A number of studies supported this newer approach. House (1941) conducted a study in the middle grades and concluded that word analysis skills were best learned when the functional use of what was taught could be demonstrated by the instruction itself. Tate, Harbar, and Zemm (1940) found that phonics taught in connection with children's needs in attacking words was superior both to isolated phonics and to no phonics. Studies by Gunderson (1939) and Tiffin and McKinnis (1940) came to similar conclusions.

Little interest in phonics and few studies grew out of the 1949's, possibly because the public was concerned with other matters. However, in the 1950's, perhaps partly in consequence of Rudolf Flesch's (1955) book, Why Johnny Can't Read, people began to think again about the place and objectives of phonics in a total reading program (Russell, 1961, p. 303). A flurry of research studies was reported. Studies by Triggs (1952), Holder (1955), and Luser (1958) all supported the belief that phonics and phonic instruction are beneficial to the reader. A number of studies did not produce such definite positive results. At the University of Stockholm, Hasslund (1955) studied eighteen pairs of twins. He found

no difference between the methods used with twins of normal and superior intelligence, but concluded that phonics was especially effective for teaching the less-gifted child. Comparing the effects of lessons using visual, phonic, and kinesthetic procedures, Hills (1956) concluded, "Different children learn to recognize words more efficiently by different teaching methods and that no one method is best for all." Similarly, Witty and Sizemore (1955) found that the nature and amount of phonics instruction was still very much in question and that, for most children, the basal reading programs provided adequate instruction in phonics, although some children needed supplementary practice. Burrell, Nicholson, Olson, Ravel, and Linehan (1958) concluded that a lack of knowledge of letter names and sounds produces failure. However, Helen M. Robinson (1959) comments that his conclusions may be distorted by his research methods. In the meantime, in Europe, Daniels and Diack (1954) had success in controlling the number of new sounds introduced on the principle of graded phonic complexity.

Phonic Instruction Today

What about phonic instruction today? Nolsen and Kaluger (1963, p. 10) point out, "Parents find it hard to believe that phonics is being taught because their son or daughter is not subjected to the hiss and grunt of isolated phonic instruction to which the parents were accustomed." Various surveys show that phonics is taught in most schools today. However, Spache (1962, p. 229) notes that only about fifteen per cent of the teachers use phonic drill isolated from actual reading. Russell (1955) surveyed

220 teachers in 33 states attending summer school and found that most teachers teach phonics and believe in them but favor an emphasis in second or third grade, not first grade. Austin and Morrison (1963, p. 28) surveyed the opinion of twenty-eight reading authorities who generally agreed that phonics is one of the essential skills that help children identify printed words. They also stated, "Each of the basal reading series currently in use in the schools included in this study introduces phonic elements and teaches certain phonic principles and their application" (1963, p. 30). On the other hand, Harris (1961, p. 325) points out, "None of them (modern phonic programs) relies mainly on phonic sounding and blending, as the older phonic systems did. Instead they attempt to provide comprehensive, varied word attack skills which include attention to meaning, configuration clues, structural analysis, and phonics." Tinker and McCullough (1962, p. 325) concluded, "All contemporary authors who have a background of research as well as a broad experience in the field advise a combined approach for instruction in word recognition" (p. 325). However, there is still much controversy. Austin and Morrison (1963, p. 28) summarize the state of phonics today when they state,

> The question, then, as to the importance of phonics or to its utilization in the classroom cannot be considered controversial. Reading authorities agree on its importance, and school officials attest its universal adoption. Any bona fide controversy must be elsewhere, and in this instance it is to be found in the approaches used to teach phonics and in the program of instruction which accompanies each approach.

Research is still playing an important role. Porter in 1960 reported

that his studies, using a procedure of omitting words in context, showed that children used phonic clues 77 percent of the time in order to get the correct word (Spache, 1963, p. 232). In 1963 Love (1961) concluded that isolation of phonics with a special workbook and drill produced no greater gains than emphasis on whole words with incidental phonics. Similarly, Ibeling (1961) found adding phonic workbooks to the basal reading programs of grades 2, 4, and 6 did not increase reading vocabulary or comprehension significantly. Saharoff (1963) concluded that phonics taught systematically may be superior for low achievers, while functional phonics is superior for average and high achievers.

The current studies show that teachers are ill prepared to teach phonics. Austin and Morrison (1963, p. 34) note, "Many teachers, whether using a basal reading or a sounding approach, are not well versed in an understanding of phonic principles themselves. Consequently, instruction may be expected to be inferior." Aaron (1960) sought to determine how much teachers and prospective teachers knew about phonics. He gave a sixty item test to 293 students. Only 2 percent got more than fifty right, and only 27 percent more than forty. Experienced teachers scored better than inexperienced teachers, but surprisingly, lower grade teachers knew no more than upper grade teachers. Aaron concluded that courses in teacher education should give more attention not only to techniques of teaching phonics, but also to the principles underlying phonic generalizations.

Current Innovations

At least two current innovations related to phonics and word recognition instruction warrant mention here. The first is the use of the Initial Teaching Alphabet, a simplified alphabet invented by Pitman and reported by John Downing (1962). It has gained much support in England and in parts of the United States. Research studies are currently underway to establish its merits.

The other innovation involves the work of the linguists. First developed by Bloomfield, carried on by Barnhart (1961), and expanded by such men as Fries (1962), it focuses on the sound systems of language and on its grammatical structures. New words are presented according to their forms -- regular forms presented first and irregular forms later. This approach is not unlike some of the earlier forms of teaching phonics, when word families were emphasized.

This resume of the related literature has shown that the matter of the teaching of word recognition, and more specifically, phonics, has been engulfed with controversy. In relating the literature in a historical, chronological order, it is apparent that there has been a tendency to accept the phonic approach, then to reject it, only to accept it again sometime later. Perhaps there are some practices which should be discarded. On the other hand, perhaps only reform is necessary. The purpose of the present study is to take a careful look at the various phonic rules or generalizations.

Consistencies in English as Related to Phonics

Various attempts have been made to find consistencies in the English language to serve as aids in word recognition. Ironically, probably more inconsistencies than consistencies have been discovered.

One of the first studies (Vogel, Jaycox, Washburne, 1923) was conducted in 1923 by a group of teachers in the Winnetka Public Schools, Winnetka, Illinois. The study, which was later expanded (Washburne, 1928), listed common phonograms to be taught in the primary grades. In a similar study Atkins (1926) examined the relation between the phonetic and unphonetic occurrences of high frequency symbols. He found sounds which were most apt to accompany the various symbols and concluded that the then often-taught phonetic elements were frequently not the most common elements. More recent studies of English have shown it to be complex and seemingly inconsistent. An examination of even a few common words such as bread, once, laugh, straight, and knife reveals silent letters, inconsistent spellings, and exceptions to established rules.

Hildreth (1950, p. 153) states that there are no unvarying sounds and that vowel sounds depend on associations with the other letters within words (p. 153). She states that only two hundred of the 350 commonest words can be written as they sound (1950, p. 152). Armstrong (1949) found that the twenty-six letters in the alphabet give rise to at least 117 sounds. Anderson states that there are three hundred different combinations which express the seventeen vowel sounds. For example, gi has one sound in gird, gem, and gleam, but another sound in

sure, _flew_, and _many_. Hoch (1954, pp. 129-132) points out that the short _i_, as in _hit_, is spelled twenty-two different ways. And of course, the classic example of _ough_ has different sounds in _ought_, _rough_, _though_, and _through_. Furthermore, nearly all letters of the alphabet are silent at some time. Hildreth (1958, p. 153) notes that about two-thirds of the words in an unabridged dictionary contain silent letters, e.g. _have_, _were_, _through_, _rose_, _sea_, _enough_, _doubt_, and _sleigh_. Of special interest to study of phonic rules, Sarterious (1931) found more exceptions than examples of the silent _e_ rule. Clymer (1961) reports that in thirty-five percent of the cases involving the most common 220 words, the first of two vowels was not long when the second was a silent _e_.

Dolch (1951, p. 35) found that there are about as many exceptions to the two vowel rule as there are instances when it applies. However, the rule does often apply, he found, for specific vowel situations such as _ai_, _ea_, _oa_, _ee_, and _ay_.

Although many studies have shown inconsistencies in English, others have demonstrated consistent patterns. For example, Hanna and Moore (1953) found English to be 86.9 percent phonetic, as they defined it. They found that single consonants are represented by regular spellings about 90 percent of the time.

A number of other specific studies have been conducted. Dolch (1938) lists two hundred common syllables after determining that 81 percent of words studied were of more than one syllable. Coburn (1934) found the most common syllables in children's written vocabulary to be _ing_, _ed_, _er_,

ly, ness, tion, and y. A study by Hildreth (1958, p. 154) showed that 25 percent of the words in English are composed of base forms with varied prefixes or endings. Thorndike (1941, p. 115) lists the common suffixes as ion, tion, ation, er, y, al, ent, ful, ity, ty, ure, and ous. Stauffer (1942) found that fourteen prefixes make up 82 percent of the total number of prefixes. These are ab, ad, be, con, de, dis, en, ex, in, pre, pro, re, sub, and un.

In respect to phonograms, Dolch (1938) showed that the twenty-four most commonly taught phonograms make up only 28 percent of the syllables in words children are likely to find in their textbooks. He recommended that teachers should, therefore, teach syllabication. Gunderson (1939) listed the phonograms found in the ten reading manuals for teaching in grades 1 and 2. Spache's (1939) study revealed that the three and four letter phonograms such as ake and ight are more phonetically constant than the two letter combinations such as in, en, at, en.

Oaks (1952) computed the frequency of vowel sounds and vowel combinations in basal readers. He concluded that one-third of vowel situations appear as early as the primer. Anderson (1964, p. 130) states that the schwa vowel sound is found in half of the multisyllabic words. In respect to consonants, Black (1952) reports that they are evenly distributed between initial and final positions in syllables with very few consonants appearing in the middle of a syllable.

In a fairly recent article Fry (1964) summarizes the findings of studies by Black (1952) and others in respect to phonics rules. He also

presents a study of his own on 300 words usually taught in the primary grades and suggests 21 rules which he found to be worth teaching.

This study is based on research reported in an article, "The Utility of Phonic Generalizations in the Primary Grades," by Theodore Clymer (1963). Clymer identified 121 generalizations from four widely used sets of readers. From these 121 generalizations he selected forty-five which were stated, "...specifically enough so that it can be said to aid or hinder in the pronunciation of a particular word." From the four basic series from which the generalizations were drawn, in addition to the Gates Reading Vocabulary for the Primary Grades, he developed a word list on which to test the generalizations. Finally he computed a "percent of utility" for each generalization by dividing the "number of words pronounced as the generalization claimed by the total number of words to which the generalization could be expected to apply." Then he set two criteria, admittedly arbitrary, as to what was meant by a "reasonable" degree of application. The first criterion was that there must be at least twenty words to which the generalization might apply. The second criterion was a percent of utility of at least 75. Only eighteen of the forty-five generalizations met the criterion of usefulness. A number of generalizations which had long been considered to have merit were among those which did not meet the criteria. The generalization, "When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent," was one of these. Clymer states that "some time-honored customs in the teaching of reading may be in need of revision."

Phonic Generalizations

Numerous authorities in the field of reading have prepared lists of phonic rules or generalizations for children to learn (Carter, McGinnis, 1957, p. 77; De Boer, Dallmann, 1960, pp. 97-98; Hallman, 1961, pp. 213-214; Hildreth, 1958, p. 354; Smith, 1963, p. 198). In addition, many authorities have made statements supporting the use of such rules or generalizations. Smith states (1963, p. 197), "In addition to phonic elements and their sounds, there are certain guiding principles concerning the pronunciation of word elements that usually are taught to children in the elementary program." Harlin (1964, p. 171) maintains that, "Teachers should be familiar with certain phonic principles. Although there are exceptions to each, these principles may be applied to many situations and will aid the reader's efforts to pronounce unknown words." Dawson and Bamman (1963, p. 171), Strang and Bracken (1957, p. 35) express similar convictions, while Nelson and Kaluger (1963, p. 82) affirm, "As for the teaching of rules, yes; a definite yes. The rules should be taught and then much drill calling for the employment of the rules should be given."

Other, less enthusiastic, statements from authorities have been made. De Boer and Dallmann (1960, p. 97) note, "There seems to be more diversity of opinion as to what rules or generalizations related to phonetic analysis should be learned than there is concerning the phonics elements to be taught." Tinker and McCullough (1962, p. 155) state, "There is little agreement concerning the advisability of teaching pupils rules for word

pronunciation."

How should rules be taught? Again, quoting directly from various authorities, Tinker and McCullough (1962, p. 153) state, "Authoritarian imposition of formal phonetic rules by the teacher should be avoided. When a child has had sufficient experiences with words he should be guided to formulate generalizations (rules) in his own words and to note exceptions to those generalizations." Strang (Strang, McCullough, Traxler, 1961, p. 209), Smith (1963, p. 215) and Russell (1955, p. 310) closely concur in their advocation of the inductive approach by which children are led to infer generalizations from their own familiarity with words.

A number of investigations have been concerned with phonic rules or generalizations. Hildreth (1958, p. 354) suggested that by the second or third grade pupils have had enough experience with specific words to note recurring sounds that conform to rules, and this makes them ready for generalized rules about them. Botts (1959) was also opposed to rote memorization of phonic rules and stated that generalizations should be based upon the child's own experience. Durrell (1956) maintained that a child should develop his own rules and should not be burdened with phonic rules. De Boer and Dallmann (1960) urge that phonetic rules be developed inductively. As reported by Gerald Smith (1963), Levin and Theem (1963) concluded that the child who appears to be attending to the entire word is actually utilizing letter cues. They found that readers frequently use first and last letters.

Summary

This summary of the literature has shown that historically there has been much controversy centered around the teaching of phonics. As a result there has been a tendency to discard practices as inherently weak without adequate consideration of the disadvantages which might accompany the discarding of such practices. Entirely new practices have been introduced when a more moderate and perhaps more effective course might have been the improvement or reform of the original methods. This study is designed to re-explain certain practices which some authorities have recently considered discarding.

In addition, this survey has summarized some of the studies concerned with the consistencies or lack of consistencies in the English language as related to the teaching of phonics, as well as to phonic rules. The next chapter will discuss the procedures used in this study.

Chapter III

OBJECTIVES AND PROCEDURES

The objective of this project was to extend the study conducted by Theodore Clymer and reported in the January 1963 issue of The Reading Teacher to ascertain if the conclusions were valid when applied to a more representative sample of vocabulary. Specifically, an answer was sought to the question: To what extent are the commonly taught phonic generalizations useful in having a reasonable degree of application to words beyond the primary grade level?

The procedures of this study involved the same procedures used by Clymer in his study. They entailed the selection of the vocabulary, the identification of the words which might apply to each generalization, and the testing of each word against the generalization.

In Clymer's study the sample included those words found in four basal reading series. This study used a random sample composed of 10 percent of the words beyond the primary level (grade four) in The Teachers' Word Book of 30,000 Words by Thorndike and Lorge (1952).

No abbreviations, hyphenated words, compound words, or proper nouns were selected. Hyphenated and compound words were generally found to consist of words below the fourth grade level. Abbreviations and proper nouns were not selected because they would not be found in general reading. Neither were any words selected from part two of The Teachers' Word Book of 30,000 Words as these had not been given a grade level rank by Thorndike and Lorge. Therefore, the list of words for this study included 13,944

words representing a random sampling of the 19,440 words assigned by Thorndike and Lorge to a grade-level rank above the fourth grade.

The spelling, phonetic respelling, and syllabic division of the words were recorded. As in Clymer's study, Webster's New Collegiate Dictionary (Bethel, 1959) was used for this information. A list was made of the words which applied to each of the various generalizations. The phonetic generalizations were checked against the words to find which words were pronounced as the generalizations claimed and which were exceptions. It was then determined which generalizations met Clymer's criteria as to reasonable degree of application. These criteria were as follows:

1. The word list must contain a minimum of twenty words to which the generalization might apply.
2. The generalization must have a percent of utility of at least 75.

The forty-five generalizations identified by Clymer and used in this study were as follows:

1. When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent.
2. When a vowel is in the middle of a one-syllable word, the vowel is short.
3. If the only vowel letter is at the end of a word, the letter usually stands for a long sound.
4. When there are two vowels, one of which is final e, the first vowel

is long and the g is silent.

5. The g gives the preceding vowel a sound that is neither long nor short.
6. The first vowel is usually long and the second silent in the digraphs ai, ea, oa, ui.
7. In the phonogram ig, i is silent and the g has a long sound.
8. Words having double g usually have the long g sound.
9. When words end with silent g, the preceding g or i is long.
10. In gy the y is silent and gives g its long sound.
11. When the letter i is followed by the letters gh, the i usually stands for its long sound and the gh is silent.
12. When g follows y in a word, it usually has the sound g as in yes.
13. When g is followed by y, the vowel sound is the same as represented by gg.
14. The two letters gg make the long g sound.
15. Y is sometimes a vowel and follows the vowel digraph rule.
16. When y is the final letter in a word, it usually has a vowel sound.
17. When y is used as a vowel, it sometimes has the sound of long i.
18. The letter g has the same sound (ō) when followed by l, y, and y.
19. When g is followed by y and final g, we expect to hear the sound heard in card.
20. When g and h are next to each other, they make only one sound.
21. Gh is usually pronounced as it is in kitchen, catch, and ghetto, not like gh.

22. When g is followed by g or i, the sound of g is likely to be heard.
23. When the letter g is followed by g or g, the sound of h is likely to be heard.
24. The letter g often has a sound similar to that of j in jump when it precedes the letter i or g.
25. When ight is seen in a word, gh is silent.
26. When a word begins kn, the k is silent.
27. When a word begins with gn, the g is silent.
28. When two of the same consonants are side by side only one is heard.
29. When a word ends in ck, it has the same last sound as in look.
30. In most two-syllable words, the first syllable is accented.
31. If a, in, re, de, di, or ba is the first syllable in a word, it is usually unaccented.
32. In most two-syllable words that end in a consonant followed by y, the first syllable is accented and the last is unaccented.
33. One vowel letter in an accented syllable has its short sound.
34. When y or gy is seen in the last syllable that is not accented, the long sound of g is heard.
35. When ture is the final syllable in a word, it is unaccented.
36. When tion is the final syllable in a word, it is unaccented.
37. In many two- and three-syllable words, the final g lengthens the vowel in the last syllable.
38. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of two consonants.

39. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable.
40. If the last syllable of a word ends in le, the consonant preceding the le usually begins the last syllable.
41. When the first vowel element in a word is followed by th, ch, or sh, these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.
42. In a word of more than one syllable, the letter y usually goes with the preceding vowel to form a syllable.
43. When a word has only one vowel letter, the vowel sound is likely to be short.
44. When there is one g in a word that ends in a consonant, the g usually has a short sound.
45. When the last syllable is the sound g, it is unaccented.

This study went one step further than Clymer's study. Clymer made no differentiation between primary and secondary generalizations, although in fact, some generalizations are explanations of the exceptions to other generalizations. For example, Clymer's seventh generalization, "In the phonogram ig, the i is silent and the g has a long sound," is an exception to his first generalization, "When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent." Since generalizations may be learned as aids and not hard and fast rules, levels of generalization may be established. If a high priority generalization fails to aid in the recognition of a word, a generalization

which may explain the exceptions to the first generalization may be attempted. Thus, the manner and the order in which generalizations are applied may become as important as the generalizations themselves. Using Clymer's study, Spache concludes that the process of applying generalizations is important. He states, "We would teach children a system of approach, a series of steps which capitalizes upon the known vagaries of English pronunciation" (1964, p. 298). With this in mind, in a second part of this present study, the generalizations were examined so that those which stated exceptions to other generalizations could be applied. The analysis was repeated, only this time both the primary generalization and the secondary generalization were compared with each of the words. The percentof utility was calculated after both types of generalizations had been applied. In addition, other generalizations which appeared to be useful as the analysis proceeded were studied.

This chapter has reported the objectives and procedures used in the study. The next chapter will report the analysis of the data and the conclusions.

Chapter IV

ANALYSIS OF THE DATA AND FINDINGS

The purpose of this chapter is to report the findings of this study, the objective of which was to determine the extent to which commonly taught phonic generalizations are useful in having a reasonable degree of application to words not beyond the primary grade level.

The findings are reported in three sections of this chapter. The first section makes a general comparison between the findings of this study and the findings of the study conducted by Clymer as reported in the January 1963 issue of The Reading Teacher. The next section discusses the findings as they relate to each of the forty-five rules. The last section summarizes the findings and presents various modifications of the rules which the results of this study suggest might enhance their usefulness.

Comparison of Present Study with Previous Study

Clymer found eighteen of the forty-five generalizations met the established criteria. Those generalizations were 5, 8, 10, 16, 20, 21, 22, 23, 25, 28, 29, 30, 31, 32, 40, 41, 44, and 45. In this study the generalizations 5, 8, 16, 20, 22, 23, 24, 28, 30, 31, 32, 36, 38, 40, 41, and 45 met the criteria. Thus, in this study sixteen generalizations were judged to possess a "reasonable" degree of application.

There are important differences between the results of this study and the one Clymer conducted using primary-grade level words. Generalizations 10, 21, 25, 29, and 44 were found by Clymer to be useful for words on the primary level, but in this study they were not found to be

useful for words beyond the primary level. For example, generalization 21 had a utility of only 67 percent in this study, as compared with 75 percent in the previous study. In this study, generalizations 10, 25, 29, and 44 failed to meet the criterion, "The word list must contain a minimum of twenty words to which the generalization might apply." However, generalization 44 would have met the criterion if a proportionate number of words to the length of the word list had been used. Therefore, generalizations,10, 21, 25, 29, and perhaps 44, should be emphasized in the primary grades where they are most helpful.

Three generalizations -- 24, 36, and 38 -- were found to meet the criteria on words beyond the primary level, although they had not been found to meet the criteria established for words of the primary level. These generalizations may be helpful for readers in the middle grades of elementary school. Generalization 24 had a percent utility in this study of 80, while in the previous study it had a percent utility of only 64. Generalization 36 was found to apply to only five words in the study by Clymer but to 85 words in this study. Generalization 38 had a percent utility of 80 in this study but only 72 in Clymer's study.

Therefore, there was found to be a difference between the two studies in a total of eight generalizations meeting the criteria. The original thinking for this study -- that the grade-level of the words used might make a difference as to the applicability of phonic generalizations -- has therefore been verified.

Specific Findings of the Study

This section presents a discussion of the findings for each of the forty-five rules. In addition, modifications of the rules which appear to make the generalizations more useful will be discussed. Table 1 presents a summary of the findings. Each of the forty-five generalizations will be discussed in the order presented in Table 1.

TABLE 1

THE UTILITY OF FORTY-FIVE GENERALIZATIONS ON WORDS BEYOND THE PRIMARY GRADE LEVEL

Generalization	Number of Words Confounding	Number of Exceptions	Percent of Utility
1. When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent.	87 (reconvertibleness)	393 (devout)	18
2. When a vowel is in the middle of a one-syllable word, the vowel is short.	101	38	73
a. Middle letter	44 (blimb)	10 (bow)	81
b. One of the middle two letters in a word of four letters.	32 (gric)	21 (jolt)	71
c. One vowel within a word of more than four letters.	5 (strung)	7 (bereb)	42
3. If the only vowel letter is at the end of a word, the letter usually stands for a long sound.	1 (thru)	2 (ma)	33
4. When there are two vowels, one of which is final e, the first vowel is long and the e is silent.	37 (haste)	22 (hvome)	63

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
5. The g gives the preceding vowel a sound that is neither long nor short.	439 (certainly)	99 (insecure)	82
6. The first vowel is usually long and the second silent in the digraphs, ai, ea, ie, and oi.	54	39	58
a. ai	19 (container)	4 (mountaineer)	83
b. ea	23 (leakage)	14 (deafness)	62
c. ie	12 (heavenly)	2 (ancient)	86
d. oi	0	19 (builder)	0
7. In the phonogram ign, i is silent and the g has a long sound.	5 (align)	17 (impatience)	23
8. Words having double g usually have the long g sound.	34 (volunteer)	0	100
9. When words end with silent e, the preceding g or i is long.	96 (authorize)	102 (elective)	48
10. In gy the y is silent and gives g its long sound.	6 (rayon)	0	100
11. When the letter i is followed by the letters gh, the i usually stands for its long sound and the gh is silent.	3 (blight)	0	100
12. When g follows y in a word, it usually has the sound g as in get.	5 (gum)	13 (renewal)	28
13. When g is followed by w, the vowel sound is the same as represented by gu.	1 (shrew)	6 (stew)	14
14. The two letters of gg make the long g sound.	9 (dagger)	9 (travel)	50

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
15. y is sometimes a vowel and follows the vowel digraph rule.	11 (widower)	23 (renewal)	31
16. When y is the final letter in a word, it usually has a vowel sound.	265 (surveyor)	5 (supply)	98
17. When y is used as a vowel, it sometimes has the sound of long i.	14 (personify)	312 (surgery)	4
18. The letter g has the same sound (j) when followed by e, y, and i.	27 (oncing)	86 (swimming)	24
19. When g is followed by g and final e, we expect to hear the sound heard in game.	2 (flare)	0	100
20. When g and h are next to each other, they make only one sound.	33 (preacher)	0	100
21. ch is usually pronounced as it is in kitchen, catch, and chair, not like sh.	33 (teacher)	17 (champagne)	67
22. When g is followed by e or i, the sound of g is likely to be heard.	79 (email)	9 (recital)	90
23. When the letter g is followed by a or o, the sound of h is likely to be heard.	151 (servant)	0	100
24. The letter g often has a sound similar to that of j in jam, when it precedes the letter i or e.	60 (drudgery)	15 (trigger)	80

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
25. When gh is seen in a word, gh is silent.	3 (blight)	0	100
26. When a word begins kn, the k is silent.	3 (knuckle)	0	100
27. When a word begins with wr, the w is silent.	4 (wreckage)	0	100
28. When two of the same consonants are side by side only one is heard.	274 (alley)	26 (illegal)	91
29. When a word ends in gh, it has the same last sound as in limb.	9 (beneath)	0	100
30. In most two-syllable words, the first syllable is accented.	396 (haggard)	134 (ammo)	75
31. If b, ld, lk, lm, ch or ln is the first syllable in a word, it is usually unaccented.	179 (devout)	36 (intellect)	83
32. In most two-syllable words that end in a consonant followed by y, the first syllable is accented and the last is unaccented.	37 (clumsy)	0	100
33. One vowel letter in an accented syllable has its short sound.	939 (possum)	331 (urban)	64
34. When y or ey is seen in the last syllable that is not accented, the long sound of e is heard.	3 (funny)	266 (pulley)	1
35. When -ture is the final syllable in a word, it is unaccented.	6 (fracture)	0	100
36. When -tion is the final syllable in a word, it is unaccented.	85 (pretention)	0	100

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
37. In many two- and three-syllable words, the final e lengthens the vowel in the last syllable.	95 (concentrate)	132 (elegance)	42
38. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants.	648 (pumpkin)	169 (athlete)	80
39. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable.	313 (asparagus)	346 (lemon)	47
40. If the last syllable of a word ends in le, the consonant preceding the le usually begins the last syllable.	33 (accurate)	13 (acquaintance)	76
41. When the first vowel element in a word is followed by th, ch, or sh, these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.	44 (achieve)	0	100
42. In a word of more than one syllable, the letter y usually goes with the preceding vowel to form a syllable.	36 (accurately)	33 (alleyway)	48
43. When a word has only one vowel letter, the vowel sound is likely to be short.	93 (getting)	46 (tooth)	70
44. When there is one g in a word that ends in a consonant, the g usually has a short sound.	13 (stomach)	3 (church)	81

Generalization	Number of Words Confounding	Number of Exceptions	Percent of Utility
45. When the last syllable is the sound /j/, it is unaccented.	165 (stalwar)	7 (volunteer)	96

For purposes of convenience for the comparison of the findings of this study with Glaser's study, Glaser's results are reproduced in Table 2.

TABLE 2

THE UTILITY OF FORTY-FIVE PHONIC GENERALIZATIONS ON PRIMARY WORDS

Generalization	Number of Words Confounding	Number of Exceptions	Percent of Utility
1. When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent.	309 (heat)	377 (chief)	45
2. When a vowel is in the middle of a one-syllable word, the vowel is short.	404	340	62
middle letter	191 (drum)	84 (send)	69
one of the middle two letters in a word of four letters	191 (rest)	135 (hold)	59
one vowel making a word of more than four letters	36 (splash)	30 (flight)	46
3. If the only vowel letter is on the end of a word, the letter usually stands for a long sound.	33 (he)	8 (the)	76

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
4. When there are two vowels, one of which is final e, the first vowel is long and the e is silent.	180 (home)	108 (done)	63
5. The e gives the preceding vowel a sound that is neither long nor short.	484 (have)	134 (give)	78
6. The first vowel is usually long and the second silent in the digraphs ai, ay, ea, and ai.	179	92	66
ai	43 (wait)	24 (said)	64
ay	101 (day)	31 (says)	66
ea	34 (beat)	1 (explained)	97
ai	1 (rain)	16 (build)	6
7. In the phonogram ld, the i is silent and the d has a long sound.	8 (field)	39 (friend)	17
8. Words having double o usually have the long o sound.	83 (moon)	2 (book)	96
9. When words end with silent e, the preceding a or i is long.	164 (make)	108 (have)	60
10. In gy, the y is silent and gives g its long sound.	36 (play)	10 (always)	78
11. When the letter i is followed by the letters gh, the i usually stands for its long sound and the gh is silent.	33 (high)	9 (sunlight)	71
12. When g follows n in a word, it usually has the sound g as in ring.	13 (sound)	33 (song)	32

Generalization	Number of Words Considering	Number of Exceptions	Percent of Utility
13. When g is followed by y, the vowel sound is the same as represented by gg.	9 (him)	17 (own)	35
14. The two letters gg make the long g sound.	30 (run)	35 (down)	39
15. y is sometimes a vowel and follows the vowel digraph rule.	30 (crow)	75 (throw)	40
16. When y is the final letter in a word, it usually has a vowel sound.	169 (dry)	32 (tray)	84
17. When y is used as a vowel in words, it sometimes has the sound of long i.	39 (fly)	170 (funny)	15
18. The letter g has the same sound (j) when followed by i, y, and e.	65 (all)	65 (sweet)	46
19. When g is followed by g and final e, we expect to hear the vowel heard in name.	9 (dare)	1 (are)	90
20. When g and h are next to each other, they make only one sound.	103 (rough)	0	100
21. gh is usually pronounced as in it in highway, night, and sight, not like gh.	99 (watch)	5 (machine)	95
22. When g is followed by a or i, the sound of g is likely to be heard.	66 (rest)	3 (answer)	96
23. When the letter g is followed by a or i the sound of j is likely to be heard.	143 (rang)	0	100

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
24. The letter g often has a sound similar to that of j in *jam*, when it precedes the letter *i* or *g*.	49 (engine)	28 (give)	64
25. When *gh* is seen in a word, *gh* is silent.	30 (light)	0	100
26. When a word begins *kn*, the *k* is silent.	10 (knife)	0	100
27. When a word begins with *wr*, the *w* is silent.	8 (write)	0	100
28. When two of the same consonants are side by side only one is heard.	334 (sorry)	3 (suggest)	99
29. When a word ends in *ch*, it has the same last sound as in *lunch*.	46 (brich)	0	100
30. In most two-syllable words, the first syllable is accented.	808 (famous)	143 (police)	85
31. If *a*, *in*, *ing*, *ly*, *ful*, *ness* or *less* is the first syllable in a word, it is usually unaccented.	86 (helping)	13 (lesson)	87
32. In most two-syllable words that end in a consonant followed by *y*, the first syllable is accented and the last is unaccented.	101 (baby)	4 (supply)	96
33. The vowel letter in an accented syllable has the short sound.	347 (city)	336 (lady)	61
34. When *r* or *gn* is seen in the last syllable that is not accented, the long sound of *g* is heard.	0	137 (baby)	0

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
35. When _ture_ is the final syllable in a word, it is unaccented.	4 (picture)	0	100
36. When _tion_ is the final syllable in a word, it is unaccented.	5 (station)	0	100
37. In many two- and three-syllable words, the final _e_ lengthens the vowel in the last syllable.	52 (invite)	62 (gasoline)	46
38. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants.	404 (bullet)	159 (singer)	72
39. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable.	190 (over)	237 (open)	44
40. If the last syllable of a word ends in _le_, the consonant preceding the _le_ usually begins the last syllable.	62 (tumble)	2 (bundle)	97
41. When the first vowel element in a word is followed by _ch_, _sh_, or _th_, these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.	30 (dishes)	0	100
42. In a word of more than one syllable, the letter _y_ usually goes with the preceding vowel to form a syllable.	33 (every)	20 (slowly)	73

Generalization	Number of Words Conforming	Number of Exceptions	Percent of Utility
43. When a word has only one vowel letter, the vowel sound is likely to be short.	433 (hid)	322 (kind)	57
44. When there is one g in a word that ends in a consonant, the g usually has a short sound.	85 (lag)	27 (blew)	76
45. When the last syllable is the sound g, it is unaccented.	188 (butter)	9 (appear)	95

1. <u>When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent</u>.

A total of 480 words were identified as being words to which this generalization could apply. Only 87 words conformed to the rule; there were 393 exceptions. Therefore, for the words beyond the primary level, this rule exhibited a utility of only 18 percent. Clymer found a utility of 45 percent for words in the primary grades. When the specific vowel combinations found in generalizations 6, 7, and 8 are omitted, 318 words remained which could apply to the generalization. Of these 318 words, only 8, or 3 percent, followed the rule. Therefore, the usefulness of this generalization must be questioned.

A detailed study of the exceptions to this rule indicated two other possible generalizations which might be useful. Out of a total of 131 words the vowel combination *ea* had a short *e* sound as in *instead* 113 times,

or a utility of 86 percent. It was also noted that the gg combination had the sound as in *fogg* in 74 percent of the 23 possible words and the sound as in *egg* the remaining 26 percent. Hence, the rule, "When the double g is seen it is likely to have either the long double g sound as in *fogg* or the short double g sound as in *egg*. It is most likely to have the long double g sound, as in *fogg*," has a utility of 100 percent as found in this study.

Some of the other specific vowel combinations in rules 6, 7, and 8 also had high percent utility. These are discussed with the appropriate rule.

It should be noted that words with gg and words with three vowels were not included as being words to which this rule might apply. Clymer might have included these words in his study. Had they been included in this present study, the percent utility for rule 1 would have been even less.

2. When a vowel is in the middle of a one-syllable word, the vowel is short.

This rule has a 73 percent utility for words beyond the primary level, as determined by this study, and a 62 percent utility for words within the primary level, as found by Clymer. However, of the 38 exceptions for words beyond the primary level, 13 had an g following the vowel. Generalization 5 indicates that the vowel sound may be modified if preceded by an g. Therefore, if the rule is changed to state, "When a vowel is in the middle of a one-syllable word, the vowel is short except that

it may be modified in words in which the vowel is followed by an r," it has a utility of 80 percent.

When the vowel is the middle letter it has a utility of 81 percent; when it is one of the middle two letters in a word of four letters it has a utility of 71 percent; and when it is one vowel within a word of more than four letters it has a utility of only 42 percent (when the modifications of vowel sounds followed by r are not considered). Thus the rule, "When the vowel is the middle letter of a one-syllable word, the vowel is short," meets the criteria established by Clymer, having a utility of 80 percent.

3. If the only vowel letter is at the end of a word, the letter usually stands for a long sound.

This generalization aptly illustrates that the phonic generalizations for the primary level may not necessarily be the same for words above the primary level. Only three words of the 1,944 included in this study could apply to this generalization. It is unlikely that this rule would be useful on words above the primary level. However, in Clymer's study of words at the primary level the rule met the criterion that the word list must contain at least twenty words to which the generalization might apply, although it misses by one point the second criterion of 75 percent utility.

4. When there are two vowels, one of which is final "e," the first vowel is long and the "e" is silent.

In respect to this rule the findings for this study were similar to

the one conducted by Clymer. The percent of utility was 63, excluding it from meeting the criteria.

5. The "e" gives the preceding vowel a sound that is neither long nor short.

This appears to be an important rule. It could be applied to more than one-fourth of the words in this study and had an 82 percent utility. Clymer's results were similar. However, this rule does not indicate what the sound is likely to be, only what it probably will not be. It may best be applied in the modification of some of the other rules, in that it indicates possible exceptions to them.

6. The first vowel is usually long and the second silent in the digraphs "ai," "ea," "oa," "ui."

This rule states specific examples of rule 1. The vowel combination ai had a percent utility of 83; ea had a percent utility of 62; oa had a percent utility of 56; and ui had a percent utility of 0. Taken together, they had a utility of only 58 percent. Clymer's findings were similar. The rule, "When the first vowel in a word is a and the second is i, the a is usually long and the i is usually silent," meets the criteria. Another rule, "When the first vowel in a word is e and the second is a, the e is usually long and the a is silent," also meets the criteria, when it is taken into consideration that the word sample for this study is somewhat smaller than the one used by Clymer. A third rule may also be useful, "The vowel combination ui often has a short i sound." Of the nineteen words found that could apply, 15 (79 percent) followed

the rule.

7. In the sequence "le," "l" is silent and the "e" has a long sound.

This rule does not meet the criteria of either study, having a percent utility of 23 in this study and 17 in Clymer's study.

8. Words having double "e" usually have the long "e" sound.

This rule was applied to 34 words in this study and was found to have a utility of 100 percent. It appears to be useful, as it did also in Clymer's study.

9. When words end with silent "e," the preceding "a" or "i" is long.

As stated, this rule was found to have a utility of only 46 percent in this study. If words ending in le were excluded, the utility could be raised to 67 percent; to 71 percent if words ending with le, and ire were excluded. These exceptions warrant further investigation in that Clymer found that the rule has a 60 percent utility for words on the primary level. If the exceptions were applied, it might become a useful rule in the primary grades, measured against the criteria used in this study.

10. In "or" the "r" is silent and gives "o" its long sound.

Clymer found this to be an important generalization for words in the primary grades. However, in this study of words above the primary grade level, only six words were found to which the generalization could apply. Therefore, the generalization does not appear to be useful for words beyond the primary level.

11. When the letter "i" is followed by the letters "gh," the "i" usually

<u>stands for the long sound and the "ck" in sticky.</u>

Although this generalization had a utility of 100 percent for words above the primary level, there were only three words in the sample to which it could apply. Perhaps above the primary grades it can be applied too infrequently to be helpful. However, while it passed the criterion of sufficient words on the primary level, it did not on that level meet the criterion of percent of utility. Further investigation is needed before a conclusion may be drawn about the usefulness of this generalization. It may prove useful for words on the upper-primary or the lower-middle grade level.

12. <u>When "c" follows "c" in a word, it usually has the sound "c" as in "see."</u>

This generalization did not meet the criteria in either study.

13. <u>When "c" is followed by "y," the vowel sound is the same as usually spelled by "ee."</u>

Clymer found only 26 words with a percent utility of 33 which could be applied to this generalization. In this study only seven words were found within 14 percent utility. However, six of the seven, or 86 percent utility, were found with the long g sound. If the rule were changed to read, "When g is followed by g, the vowel sound is long g," it may have a higher percent utility for words on the primary level also. The question may also be asked as to the necessity of a child distinguishing between the long double g and the long g sounds in order to recognize a word.

14. The two letters "gg" make the long "g" sound.

This rule as stated has a 30 percent utility. However, if the rule were changed to, "The two letters gg make the long g sound or the gg sound as in egg," it would have 100 percent utility in the sample in this study of words beyond the primary level.

15. "C" is sometimes a vowel and follows the vowel digraph rule.

This rule has a utility of 31 percent in this study. The percent would be slightly higher if the exceptions found in rules 13 and 18 were considered.

16. When "c" is the first letter in a word, it usually has a vowel sound.

This generalization has an 84 percent utility using words in the primary grades and a 98 percent utility using words above the primary grades. In all exceptions in this study, the y was silent, following generalization 10. Therefore, if this generalization was incorporated with generalization 10, the two together would have 100 percent utility for words above the primary level. Similar findings might have been noted had Clymer applied the two generalizations together in his study -- perhaps increasing the rules' usefulness.

17. When "c" is used as a vowel, it sometimes has the sound of long "i."

Stated this way, this generalization has a utility of only 4 percent. However, if it were changed to read, "When y is used as a vowel, it sometimes has the sound of long g," it would have a utility of 92 percent.

18. The letter "c" has the same sound (/s/) when followed by "i," "y," and "e."

As stated, the percent of utility is 34. Only four of the gh words follow this rule, all but twelve of them having either long or short a sounds. Therefore, the h does not seem to modify the long or short g. However, of the 38 gg and gg words, all but five, or 84 percent, follow the rule. If the rule were changed to state, "The letter g has the same sound (j) when followed by g and n." (leaving out the h) it would meet the criteria of this study.

19. When "c" is followed by "c" and final "e," we expect to hear the sound heard in "seen."

This was not found to be a useful generalization in that only two words were found in the sample to which it could apply.

20. When "c" and "c" are next to each other, they make only one sound.

This generalization meets the criteria established for this study and appears to be useful.

21. "Ch" is usually pronounced as it is in "kitchen," "catch," and "chair," not like "sh."

This rule was applied to 32 words and had a utility of 67 percent. Of the exceptions, 13 words or 33 percent had a k sound as in machine; 3 words or 6 percent had a sh sound, and in one word (yacht) the ch was silent. Glaser found this rule to be useful with a 95 percent utility. The generalization did not meet the established criteria in this study using words beyond the primary level.

22. When "c" is followed by "e" or "i," the sound of "c" is likely to be heard.

Eighty-eight words of the sample were applied to this rule. It had a 90 percent utility, meeting the established criteria. In the nine exceptions, the sound of gh was heard rather than g.

33. When the letter "c" is followed by "e" or "i," the sound of "c" is likely to be heard.

All of the 121 words applied to this generalization followed it. It appears to be an important rule.

34. The letter "e" often has a sound similar to that of "i" in "bend" when it precedes the letter "r" or "n."

In the present study of words beyond the primary level, this generalization was applied to 73 words with a percent of utility of 88. The generalization meets the criteria established for the study. However, Clymer found that the application of this generalization had a utility of less than 75 percent on the primary level, and thus was not considered useful. The rule might best be taught in the intermediate grades rather than the primary grades.

35. When "ght" is seen in a word, "gh" is silent.

Although this rule had a percent utility of 100, there were only three words to which it might apply. Therefore, the generalization was not found to be useful for words beyond the primary level. However, Clymer did find it a useful generalization at the primary level in that there were enough words to which it could apply. It would probably best be explained on the primary grade level.

36. When a word begins "kn," the "k" is silent.

In respect to this generalization, the results of this study paralleled the results of Glynn's study. Although it had 100 percent utility, there were not enough words to which it could apply, as established by the criteria of this study, to warrant teaching it.

39. When a word begins with "ge," the "j" is silent.

The results for this generalization, in both studies, were similar to those described for generalization 38. Although it had 100 percent utility, there were not enough words to which it could apply, as established by the set criteria.

40. When two of the same consonants are side by side only one is heard.

This rule was applied to 309 words with a 91 percent utility and, therefore, deemed to be useful. Of the 28 exceptions, all but three were a result of a prefix or suffix being added, for example, illegal. Two of the 28 exceptions had an ly added to a root word ending in l, and both l's were counted, as in dreadfully.

39. When a word ends in "le," it has the same last sound as "ful."

Glynn found this rule applicable to 46 words on the primary level with a percent of utility of 100, thus meeting both criteria. However, in this study it could be applied to only nine words, also with 100 percent utility. Therefore, this rule appears to lack usefulness above the primary grades according to the established criteria.

38. In most two-syllable words, the first syllable is accented.

This rule met the criteria for usefulness in both this study and the previous study by Glynn. Approximately a third of the exceptions can be

accounted for through application of rule 36. Additional prefixes such as pan- and pen- could explain still other exceptions.

36. If "a," "ha," "re," "se," "ho," or "he" is the first syllable in a word, it is usually accented.

Of the 213 words in this study to which this rule could apply, 139 or 65 percent, conformed to the rule. Gipson's results were similar although he found fewer words which could apply to the rule.

In this study no differentiation was made between secondary and primary accents. Gipson does not report the way in which he regarded secondary accents. If only the primary accent had been considered in this study, the percent of utility would have been somewhat higher.

38. In most two-syllable words that end in a consonant followed by "e," the first syllable is accented and the last is unaccented.

In both this study and the one by Gipson this rule met the established criteria and appears to be useful. Of course, this rule could be expected to have a high percent of utility because it is a special case for rule 30 which also has a high percent of utility.

39. The vowel letter in an accented syllable has its short sound.

This rule, applied to 1,400 words analyzed for this study, has a utility of 64 percent. If the rule is reworded to read, "The vowel letter in an accented syllable has its short sound if it comes before the end of the syllable and its long sound if it comes at the end of the syllable," the utility would be raised to 78 percent. Addition of the phrase, "except when it is followed by an r" (as in rule 3) raises the percent of

utility to 98.

34. Rule "C" or "cc" is open to the less reliable that is not accented, the less sound at "C" is heard.

As the rule is stated, only three (3 percent) of the 100 applicable words conformed to its rule. However, if the rule read "short C" instead of "long a," 101 words (87 percent) would have conformed.

35. When "r-vowel" is the first syllable in a word, it is pronounced.

There were only six words in the word list to which this word could apply. Consequently, although it had 100 percent utility, it is not considered to be a useful rule as determined by the criteria established for this study. Glynn had similar results.

36. When "r-vowel" is the first syllable in a word, it is pronounced.

This rule supports the original thinking which prompted this study -- that the usefulness of phonic generalizations may differ above and below the primary level. Glynn found only 9 words from his list to which this rule might apply, while 53 words from this study's shortened word list conformed. In both studies the utility was 100 percent. It is apparent that this rule is useful for words beyond the primary level, but it may be of questionable value, as defined in this study, for words within the primary level.

A *ridge* on the end of a four syllable word seems to indicate a secondary accent on the first syllable with a primary accent on the syllable preceding the *ridge*. This held true in 40 of 42 words, indicating a 93 percent utility. The primary accent failed to fall in the second to last

syllable only three times out of all the *-ring* words on the list. The accent was on the second to last syllable in all the three-syllable words, all but two of the four-syllable words, and all but one of the five-syllable words. In five-syllable words ending in *-ring*, the secondary accent fell approximately half the time on the first syllable and half the time on the second syllable. Similar results were found with words ending with *-ring*.

37. In many two and three-syllable words, the final "r" functions the vowel in the last syllable.

Of the total number of words in the sample, this rule could be applied to 227 with a 42 percent utility. Ninety-five words conformed and there were 132 exceptions. Of the exceptions, 30 ended with *ha* and 11 ended with *hre*. So that no *ha* or *hre* words followed the rule, their omission would increase the utility to 64 percent. Other consistent exceptions might be found to make the rules more usable.

38. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of two consonants.

Glynn found that this rule had only 70 percent utility with the words he studied. In this study, the rule could be applied to 831 words, meeting the criteria of usefulness with 80 percent utility. Of the 163 exceptions, 34 words included vowels modified with an *r* as in rule 3, 36 words had a double consonant with one of them silent as described in rule 36, 21 words had a *gh* with the *h* sound as in rule 39, 39 were found to have the prefixes listed in rule 31, and 33 words had one of the sounds *ch*, *sh*,

or gh as in rule 41. All five of these rules were found by Glynn to be useful. If these rules were applied as exceptions to rule 38, it would have a utility of 96 percent.

39. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable.

This rule could be applied to 659 words of the list with a 47 percent utility. Glynn noted like results. Of the 346 words which were exceptions to the rule, 93 were root words plus a prefix, and 240 had beginning syllables which ended with a consonant with a short vowel sound. Consequently, if the rule read, "Except in some words with a prefix and a root word, if the first vowel sound in a word is followed by a single consonant, that consonant begins the second syllable and the vowel sound in the first syllable will be long, or if the consonant ends the first syllable the vowel sound will be short," the percent of utility would be 84. Of the 240 beginning syllables ending with a consonant and containing a short vowel sound 227 or 95 percent are accented. Of the 237 beginning syllables ending with a long vowel, 138 or 58 percent are unaccented.

40. If the last syllable of a word ends in "le," the consonant preceding the "le" usually begins the last syllable.

This rule met the criteria of usefulness in both studies. In this present study a total of 68 words could be applied to the rule with a utility of 78 percent. Of the 15 exceptions, 10 had double consonants, as in scribble, before the le.

41. When the first vowel element in a word is followed by "th," "ch," or

Exh." these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.

This rule could be applied to 44 words in the sample with 100 percent utility. In this study, as in the one conducted by Clymer, the rule met the established criteria.

42. In a word of more than one syllable, the letter "y" usually goes with the preceding vowel to form a syllable.

In both this and the previous study, this rule failed to meet the criterion of utility. In the study conducted by Clymer, it had a percent of utility of 73, while in the present study the utility was only 40 percent. An analysis of the exceptions uncovered no consistent pattern which might be employed to make the rule more useful.

43. When a word has only one vowel letter, the vowel sound is likely to be short.

This rule could be applied to 136 words in the sample with a 70 percent utility, as compared with 57 percent in the previous study. Therefore, in its present form, it does not meet the criteria. However, of the 41 exceptions, 14 words had vowels which were modified by an "r" as in rule 5. Omitting these exceptions would raise the percent of utility to 78.

44. When there is one "e" in a word that ends in a consonant, the "e" usually has a short sound.

This rule met the criterion of utility in both studies. It also met the criterion of frequency of use in Clymer's study but failed to do so

in this study. This rule appears to be more useful in the primary grades than in the later grades as there are fewer words beyond the primary level to which this rule might apply.

45. When the last syllable is the sound "r," it is unaccented.

In this study there were 163 words which conformed to this rule and only seven which did not, producing a utility of 96 percent. Clymer found similar results. Apparently this is a useful rule both above and below the primary level.

Summary of Findings

The previous section of this chapter gave the results of this study in detail. This section will list the phonic generalizations found to meet the criteria of usefulness as determined by Clymer's study and the present study. Modifications of various rules which increase the percent of utility will also be given.

These generalizations which have been found to meet the established criteria of usefulness are as follows:

*+ 3. The g gives the preceding vowel a sound that is neither long nor short.

*+ 8. Words having double g usually have the long g sound.

+10. In gg the g is silent and gives g its long sound.

*+16. When y is the final letter in a word, it usually has a vowel sound.

*+20. When g and h are next to each other, they make only one sound.

+21. ch is usually pronounced as it is in kitchen, catch, and chair, not like sh.

*+22. When g is followed by g or j, the sound of g is likely to be heard.

*+23. When the letter g is followed by g or h, the sound of h is likely to be heard.

* 24. The letter g often has a sound similar to that of j in jump when it precedes the letter i or y.

+25. When ght is seen in a word, gh is silent.

*+26. When two of the same consonants are side by side only one is heard.

+29. When a word ends in gh, it has the same last sound as in look.

*+30. In most two-syllable words, the first syllable is accented.

*+31. If a, in, re, de, be, or le is the first syllable in a word, it is usually unaccented.

*+32. In most two-syllable words that end in a consonant followed by y, the first syllable is accented and the last is unaccented.

* 36. When sion is the final syllable in a word, it is unaccented.

* 38. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants.

*+40. If the last syllable of a word ends in le, the consonant preceding the le usually begins the last syllable.

*+41. When the first vowel element in a word is followed by th, sh, or ch, these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.

+44. When there is one g in a word that ends in a consonant, the g

usually has a short sound.

+45. When the last syllable is the sound g, it is unaccented.

+As determined to be useful on the primary level by Clymer's study.
*As determined to be useful beyond the primary level by the present study.

This study has indicated a number of modifications to the various generalizations which would raise their percent of utility and meet both criteria established by this study. These modifications, along with their percent of utility, are as follows:

1. The letters ng usually represent a short ŋ sound as in nation. — 86 percent
2. The letters gg usually have the long double g sound as in fogged or the short double g sound as in ggmd. They are more likely to have the double g sound as in fogged. — 100 percent
3. When a vowel is in the middle of a one-syllable word, the vowel is short except that it may be modified in words in which the vowel is followed by an r. — 80 percent
4. When the vowel is the middle letter of a one-syllable word, the vowel is short. — 80 percent
5. When the first vowel in a word is g and the second is i, the g is usually long and the i is silent. — 83 percent
6. When the first vowel is g and the second is g, the g is usually long and the g is silent. — 86 percent
7. The vowel combination gi has a short i sound. — 79 percent
8. The two letters gg make the long g sound or the gg — 100 percent

sound as in sink.

9. When y is used as a vowel, it most often has the sound of long i. — 92 percent

10. The letter a has the same sound (ô) when followed by w and l. — 84 percent

11. One vowel letter in an accented syllable has its short sound if it comes before the end of the syllable and its long sound if it comes at the end of the syllable. — 78 percent

12. One vowel letter in an accented syllable has its short sound if it comes before the end of the syllable and its long sound if it comes at the end of the syllable except when it is followed by an r. — 92 percent

13. When r or rr is seen in the last syllable that is not accented, the short sound of ĕ is heard. — 97 percent

14. A -tion at the end of a four-syllable word indicates a secondary accent on the first syllable with a primary accent on the syllable preceding the -tion. — 95 percent

15. Taking into account the original rules 5, 28, 29, 31, and 41, if the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants. — 96 percent

16. Except in some words with a prefix, if the first vowel sound in a word is followed by a single consonant, that consonant begins the second syllable and the — 84 percent

vowel sound in the first syllable will be long, as if the consonant ends the first syllable the vowel sound will be short.

17. A beginning syllable ending with a consonant and containing a short vowel sound is likely to be accented. — 95 percent

18. When a word has only one vowel letter, the vowel sound is likely to be short unless the vowel letter is followed by an r. — 78 percent

No attempt was made to study all possible exceptions and modifications of the forty-five generalizations. There are other possible modified generalizations which may be found in the discussion of such rules as 9, 11, 13, 17, 21, 30, 33, and 34. Only those exceptions and modifications were included which were shown to have usefulness relative to the other generalizations in this study as chosen by Clymer and which formed the framework for investigations in this study or which became apparent as the analysis proceeded.

Some of the modifications may need to be stated in terms which are better suited to the language of children. Perhaps their usefulness should be ascertained in terms of word lists other than the one presented in this study, such as the list of words on the primary level used by Clymer. The generalizations should be tried in actual classroom situations to determine if they can be appreciated by children.

This chapter has presented the findings of this study and compared them with the findings of the earlier study by Clymer. In addition, this

chapter presented some modified phonic generalizations which met the criteria established for this study and which seem to have value in facilitating word recognition. The next chapter will present a summary of the study.

Chapter V

Conclusions and Implications

This study was conceived as an extension of a study reported in a provocative article by Theodore Clymer in the January, 1963 issue of The Reading Teacher. The article, "The Utility of Phonic Generalizations in the Primary Grades," casts doubt on the efficacy of many phonic generalizations widely used in reading teaching today, seriously questioning their worth as reading aids. Clymer studied forty-five frequently taught phonic rules and computed a "percent of utility" for each one from the number of words pronounced as the rule claimed divided by the total number of words applicable to a given generalization. Only 40 percent of the generalizations Clymer examined exhibited a reasonable degree of usefulness. The implication is that if many phonic rules taught in school today do not prove themselves consistently valuable in unlocking word pronunciation, a major revision in reading teaching is indicated.

Since reading skill is the foundation upon which further education rests, any practice which affects its development deserves intensive investigation. Clymer's study dealt with the utility of phonic rules at the primary level. The phonic rules which are useful at the inception of reading instruction might very well differ from those which facilitate pronunciation of unknown words at the middle or upper primary level. This present study was designed to investigate the usefulness of phonic rules for words beyond the primary, fourth grade, level.

Procedures

Procedurally this study closely parallels Clymer's, except for the

word list. Clymer's sample consisted of words from four basal reading series, while the 1,944 words used in this study were a sample of 10 percent of the words beyond the primary level in The Teachers' Word Book of 30,000 Words, by Thorndike and Lorge (1952). The common spelling, phonetic respelling, and syllabication of each word was obtained from Webster's New Collegiate Dictionary (Bethel, 1959). The words were grouped into lists as they applied to each generalization. Whenever words referred to more than one rule, they were included in more than one list. As in Clymer's report, a percent of utility was calculated for each rule based on the total number of words to which the rule as defined could apply and the number of words actually pronounced as the rule claimed. Those generalizations which met Clymer's criteria of reasonable degree of application were then identified. The first criterion was that the word list contain a minimum of 20 words to which the generalization might apply, and the second criterion stipulated that the generalization have a percent of utility of at least 75.

Results

Those generalizations which met the established criteria both in Clymer's and the present study were the following:

5. The g gives the preceding vowel a sound that is neither long nor short.
8. Words having double g usually have the long g sound.
16. When y is the final letter in a word, it usually has a vowel sound.
20. When g and h are next to each other, they make only one sound.

22. When g is followed by g or j, the sound of g is likely to be heard.

23. When the letter g is followed by g or g, the sound of k is likely to be heard.

28. When two of the same consonants are side by side only one is heard.

30. In most two-syllable words, the first syllable is accented.

31. If a, in, re, de, de, or be is the first syllable in a word, it is usually unaccented.

32. In most two-syllable words that end in a consonant followed by y, the first syllable is accented and the last is unaccented.

40. If the last syllable of a word ends in le, the consonant preceding the le usually begins the last syllable.

41. When the first vowel element in a word is followed by sh, ch, or th, these symbols are not broken when the word is divided into syllables and may go with either the first or second syllable.

45. When the last syllable is the sound r, it is unaccented.

These generalizations which met the established criteria in Clymer's study, but not in the present study, were the following:

10. In gy the y is silent and gives g its long sound.

21. ch is usually pronounced as it is in kitchen, catch, and chair, not like sh.

25. When ght is seen in a word, gh is silent.

29. When a word ends in gh, it has the same last sound as in look.

44. When there is one g in a word that ends in a consonant, the g usually has a short sound.

Those generalizations which met the established criteria in the present study, but not in Glyner's study, were the following:

24. The letter g often has a sound similar to that of j in jump when it precedes the letter i or y.
36. When -tion is the final syllable in a word, it is unaccented.
38. If the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants.

Those generalizations which did not meet the established criteria in either study were the following:

1. When there are two vowels side by side, the long sound of the first one is heard and the second is usually silent.
2. When a vowel is in the middle of a one-syllable word, the letter usually stands for a short sound.
3. If the only vowel letter is at the end of a word, the letter usually stands for a long sound.
4. When there are two vowels, one of which is final e, the first vowel is long and the e is silent.
6. The first vowel is usually long and the second silent in the digraphs, ai, ea, ee, and oa.
7. In the phonogram ign, i is silent and the g has a long sound.
9. When words end with silent e, the preceding a or i is long.
11. When the letter i is followed by the letters gh, the i usually stands for its long sound and the gh is silent.
12. When g follows y in a word, it usually has the sound g as in yes.

13. When g is followed by y, the vowel sound is the same as represented by gg.

14. The two letters gg make the long g sound.

15. y is sometimes a vowel and follows the vowel digraph rule.

17. When y is used as a vowel, it sometimes has the sound of long i.

18. The letter g has the same sound (ĝ) when followed by i, y, and y.

19. When g is followed by g and final g, we expect to hear the sound heard in ggg.

26. When a word begins kn, the k is silent.

27. When a word begins with wr, the w is silent.

33. One vowel letter in an accented syllable has its short sound.

34. When y or gy is seen in the last syllable that is not accented, the long sound of g is heard.

35. When -ttyng is the final syllable in a word, it is unaccented.

37. In many two- and three-syllable words, the final g lengthens the vowel in the last syllable.

39. If the first vowel sound in a word is followed by a single consonant, that consonant usually begins the second syllable.

42. In a word of more than one syllable, the letter y usually goes with the preceding vowel to form a syllable.

43. When a word has only one vowel letter, the vowel sound is likely to be short.

Many of the generalizations which fail to meet the criteria could be rendered useful with modifications. As stated, the following generalizations

met the established criteria:

1. The letters ng usually represent a short ŋ sound as in nation.
2. The letters gg usually have the long double g sound as in frigid or the short double g sound as in egg. They are more likely to have the double g sound as in fogy.
3. When a vowel is in the middle of a one-syllable word, the vowel is short except that it may be modified in words in which the vowel is followed by an r.
4. When the vowel is the middle letter of a one-syllable word, the vowel is short.
5. When the first vowel in a word is a and the second is i, the a is usually long and the i silent.
6. When the first vowel is a and the second is a, the a is usually long and the a is silent.
7. The vowel combination qu has a short ŭ sound.
8. The two letters gg make the long g sound or the gz sound as in exit.
9. When y is used as a vowel, it most often has the sound of long ī.
10. The letter a has the same sound (ô) when followed by w and y.
11. One vowel letter in an accented syllable has its short sound if it comes before the end of the syllable and its long sound if it comes at the end of the syllable.
12. One vowel letter in an accented syllable has its short sound if it comes before the end of the syllable and its long sound if it comes at the end of the syllable except when it is followed by an r.

13. When y or gy is seen in the last syllable that is not accented, the short sound of i is heard.
14. A -tion at the end of a four-syllable word indicates a secondary accent on the first syllable with a primary accent on the syllable preceding the -tion.
15. Taking into account the original rules 5, 28, 29, 31, and 41, if the first vowel sound in a word is followed by two consonants, the first syllable usually ends with the first of the two consonants.
16. Except in some words with a prefix and a root word, if the first vowel sound in a word is followed by a single consonant, that consonant begins the second syllable and the vowel sound in the first syllable will be long, or if the consonant ends the first syllable the vowel sound will be short.
17. A beginning syllable ending with a consonant and containing a short vowel is likely to be accented.
18. When a word has only one vowel letter, the vowel sound is likely to be short unless the vowel letter is followed by an r.

Intensive examination of all possible exceptions and modifications was not the purpose of this study. Rather, the 18 generalizations cited above were formulated as adaptations of the 45 basic rules considered in this study.

Conclusions and Implications

Although Clymer found 18 generalizations meeting the criteria in his study of words within the primary level, this study identified only

16. The important difference between the results of the two studies lies in the fact that although 13 generalizations demonstrated their usefulness in both studies, five of those which proved useful on the primary level failed to do so beyond the primary level, and, conversely, three of those which were useful beyond the primary level were judged not useful at the primary level. The original thinking, therefore, for this study -- that the grade-level of the words used might make a difference as to the applicability of phonic generalizations -- has been verified. It is possible that different generalizations should be emphasized at different levels of reading instruction. This study points to the need of developing a sequence for teaching generalizations.

This study has been limited to the 45 generalizations used by Clymer, although additional possible rules have been suggested. There may be other generalizations not studied which would be more helpful than the ones included. Similarly, it may be that the wording of the generalizations could better correspond with the immature comprehension of children.

The percent of utility used as a criterion in this study may be too high. Possibly 50, 25, or an even lower percent of utility would be better than no aid at all. The total number of words in which a generalization functions, rather than the percent of utility, may be a better criterion.

This present study has not shown which rules children can actually learn and use. While some rules may be so complicated that children cannot readily apply them to their reading, other rules may be so obvious that children learn them without explicit guidance from teachers. Future studies

need to be conducted which develop procedures for teaching generalizations and which try them out under controlled experimental conditions.

Spache suggest (1964, p. 298) the need for systematic procedures for attacking words, which would emphasize a series of steps. In that some generalizations in this study are exceptions to others, children may profit from learning which generalizations should be tried first and which generalizations should next be applied if the first effort fails to unlock the word. Some of the generalizations may best be applied in conjunction with others and not as isolated rules. The selections of such generalizations, their wording, their placement in a systematic framework, and the empirical experimentation with them in classrooms would be a challenging and appropriate extension of this study.

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